

WHAT IS CLAIMED IS:

1. A line processing equipment comprising:
 - at least one line processing means for processing respective lines; and
 - line connection reconfiguration means to set up and reconfigure connections from input lines coming into said line processing equipment to
 - 5 either said line processing means or output lines going out of said line processing equipment and connections from said line processing means to either other line processing means necessary subsequently to said line processing means or said output lines.
2. A line processing equipment as claimed in claim 1, wherein said line connection reconfiguration means includes a plurality of input terminals and a plurality of output terminals and sets up arbitrary connections between said input terminals and said output terminals and reconfigures said connections;
 - 5 and wherein said input lines and outputs of said line processing means are connected to said input terminals respectively and said output terminals are connected to inputs of said line processing means and said output lines respectively.
3. A line processing equipment as claimed in claim 1, wherein said line connection reconfiguration means has a redundant structure consisting of a plurality of element line connection reconfiguration means cascaded serially so that any one of said element line connection
 - 5 reconfiguration means can set up and reconfigure said connections.
4. A line processing equipment as claimed in claim 1, wherein said line connection reconfiguration means includes a connector plug array board having

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5. A line processing equipment as claimed in claim 4, wherein said automatic mechanism manipulates insertion and pulling of said connectors on both of said one and the other surfaces respectively.

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7. A line processing equipment as claimed in claim 6, wherein at least one of said line processing means is a packet switch for switching said packet multiplexed optical signals.

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9. A line processing equipment as claimed in claim 6, wherein at least one of

said line processing means is a time division switch for switching said time division multiplexed optical signals.

10. A line processing equipment as claimed in claim 6, wherein at least one of said line processing means is a wavelength demultiplexer for demultiplexing said wavelength division multiplexed optical signals into a plurality of optical signals.

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11. A line processing equipment as claimed in claim 10, wherein said wavelength demultiplexer includes a waveband demultiplexer for demultiplexing said wavelength division multiplexed optical signals into a plurality of optical signals each of which includes a waveband consisting of a plurality of wavelength.

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12. 10. A line processing equipment as claimed in claim 6, wherein at least one of said line processing means is a wavelength multiplexer for multiplexing a plurality of optical signals into a wavelength division multiplexed optical signal.

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13. A line processing equipment as claimed in claim 12, wherein said wavelength multiplexer includes a waveband multiplexer for multiplexing optical signals each of which includes a waveband consisting of a plurality of wavelength into said wavelength division multiplexed optical signal.

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14. A line processing equipment as claimed in claim 6, wherein at least one of said line processing means is a wavelength converter for said optical signals.

15. A line processing equipment as claimed in claim 6, wherein at least one of

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said line processing means is a circuit for monitoring optical signal quality of said optical signals.

16. A line processing equipment as claimed in claim 6, wherein at least one of said line processing means is a circuit for generating test patterns and inserting said test patterns into said optical signals.

17. A line processing equipment as claimed in claim 6, wherein at least one of said line processing means is a line switch for switching said optical signals.

18. A line processing equipment as claimed in claim 17, wherein

said line connection reconfiguration means sets up and reconfigures said connections between said input optical fiber lines, inputs and outputs of said line switch and said output optical fiber lines, and configures working lines and

5 backup lines; and wherein

said line switch carries out protection switching from said working lines to said backup lines when a failure occurs on said working lines.

19. A line processing equipment as claimed in claim 18, wherein

a plurality of said line processing equipment are interconnected to form a network; and wherein

5 said line switch carries out protection switching from working lines to said backup lines in a shared ring protection scheme.

20. A line processing equipment as claimed in claim 18, wherein

a plurality of said line processing equipment are interconnected to form a network; and wherein

said line switch carries out protection switching from said working lines

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5 to said backup lines in a redundant line protection scheme.

21. A line processing equipment as claimed in claim 18, wherein

a plurality of said line processing equipment are interconnected to form a network; and wherein

said line switch carries out protection switching from said working lines

5 to said backup lines in a shared backup line protection scheme.

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